

FIG. 3

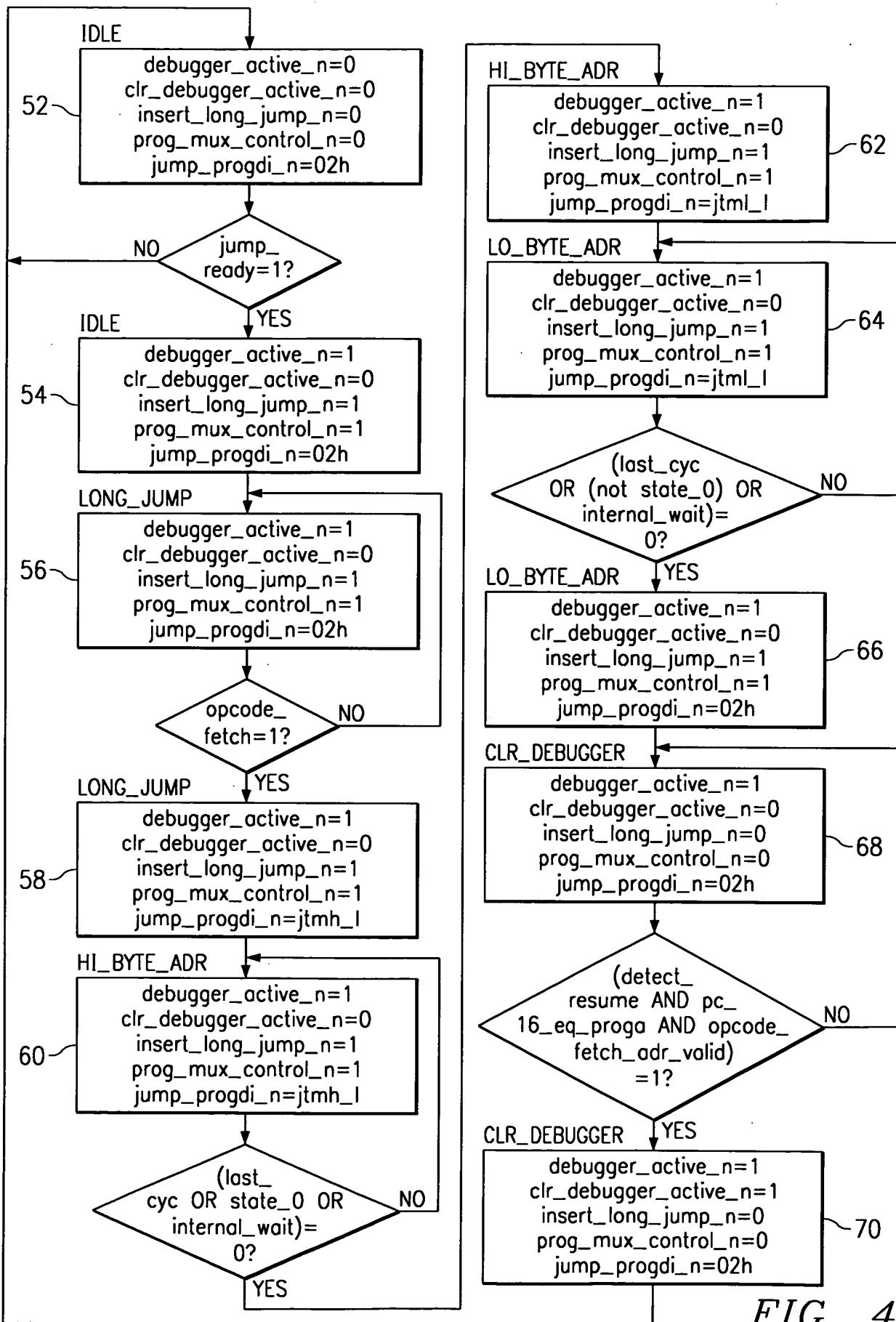


FIG. 4

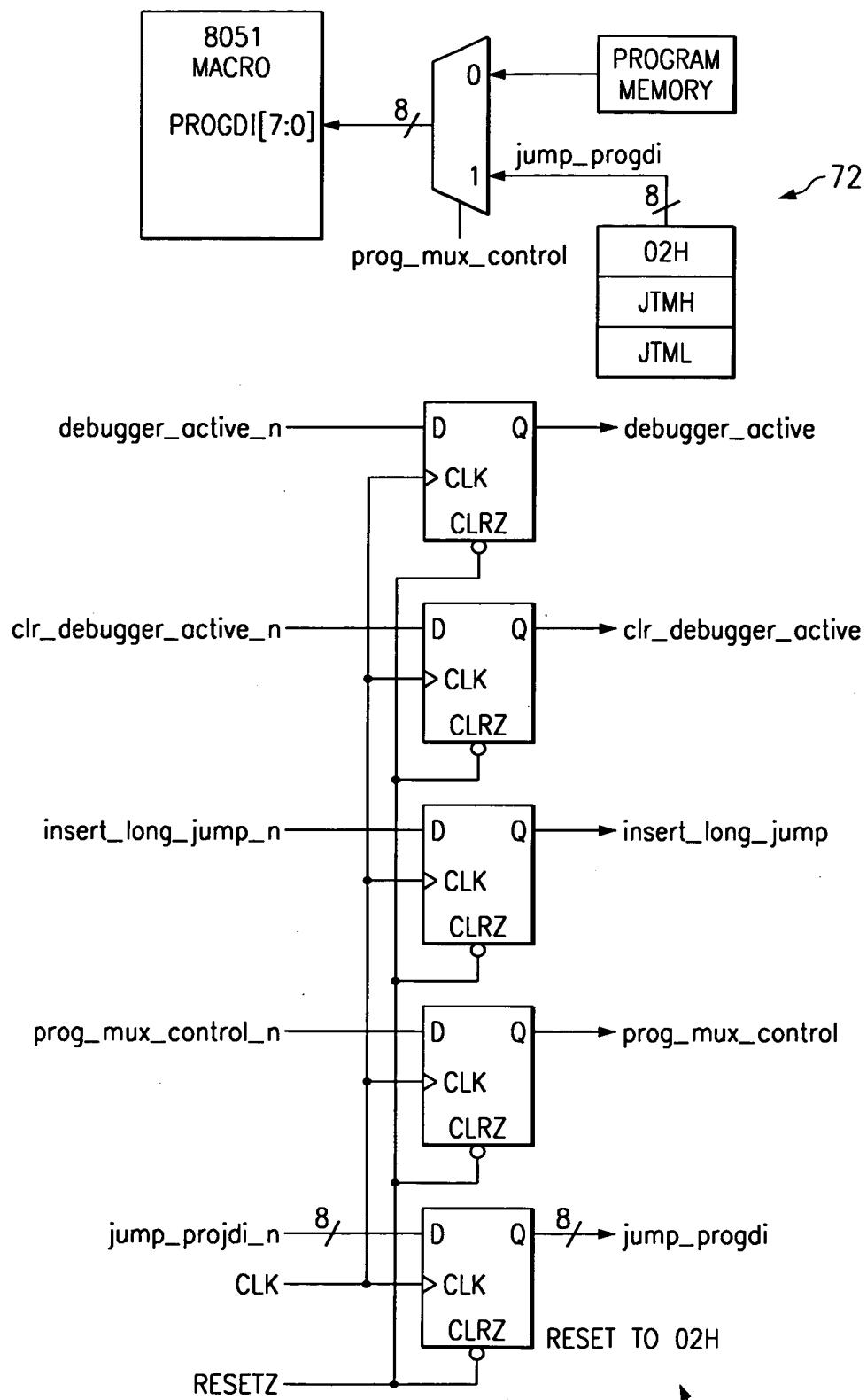
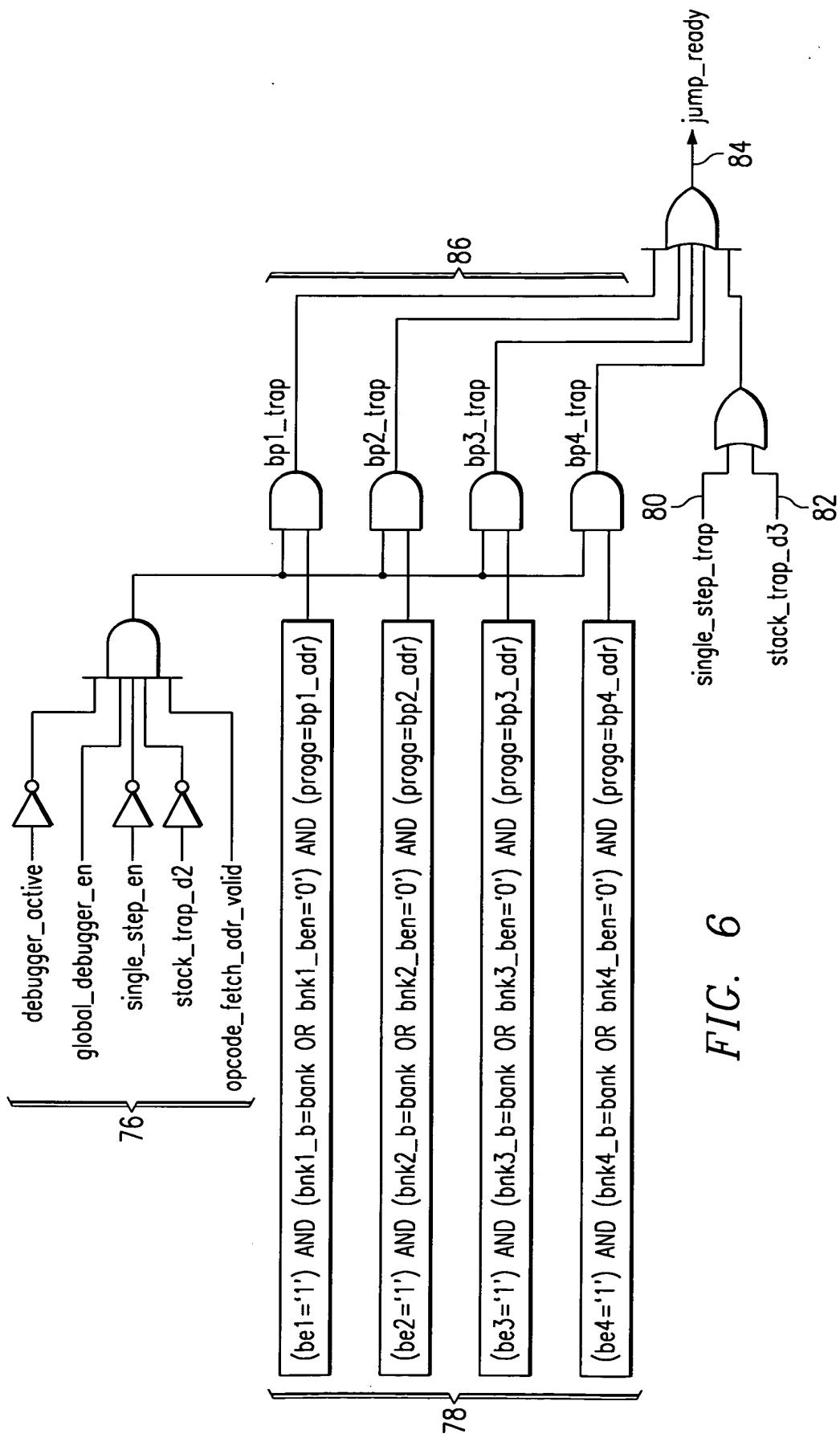


FIG. 5



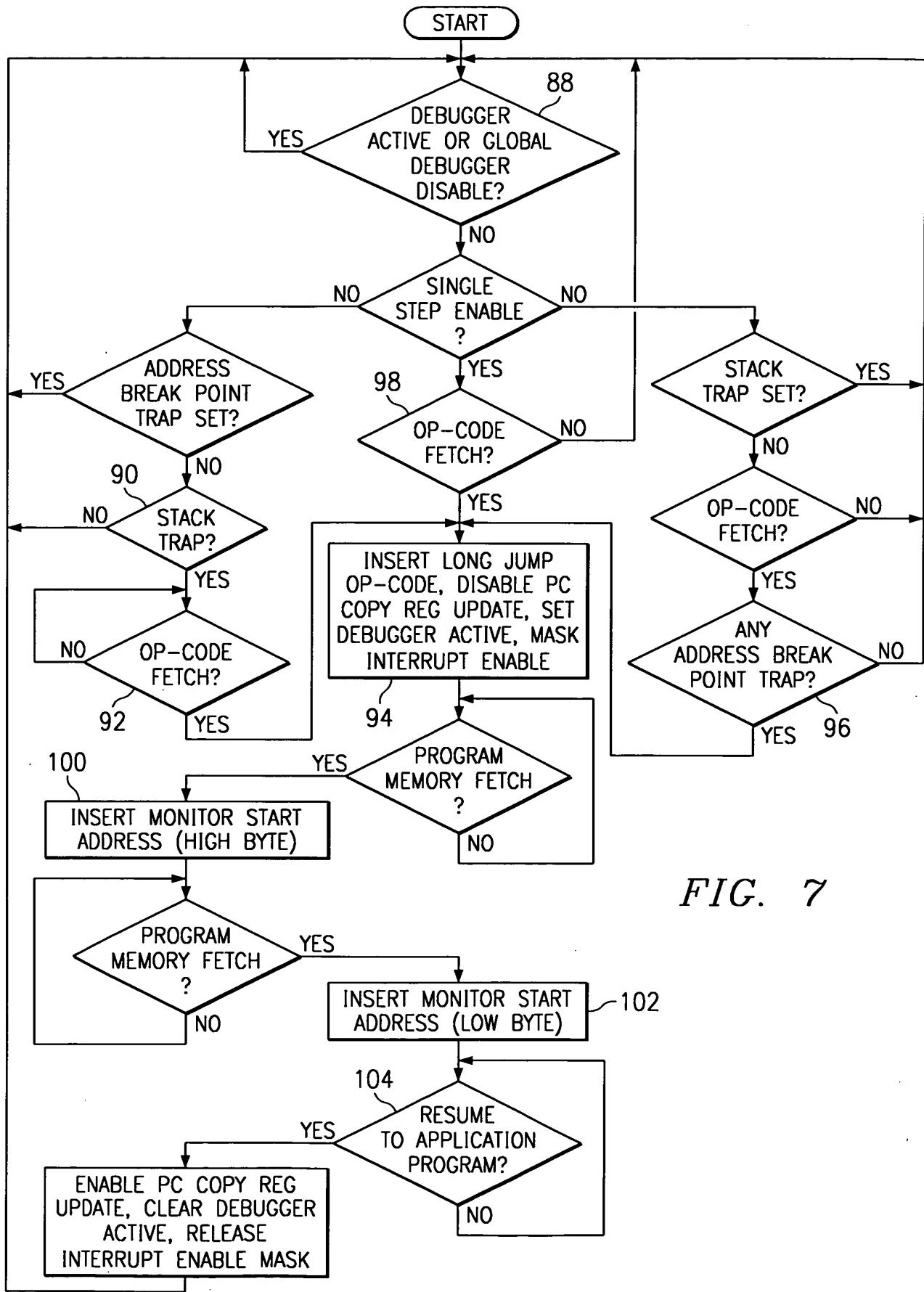


FIG. 7

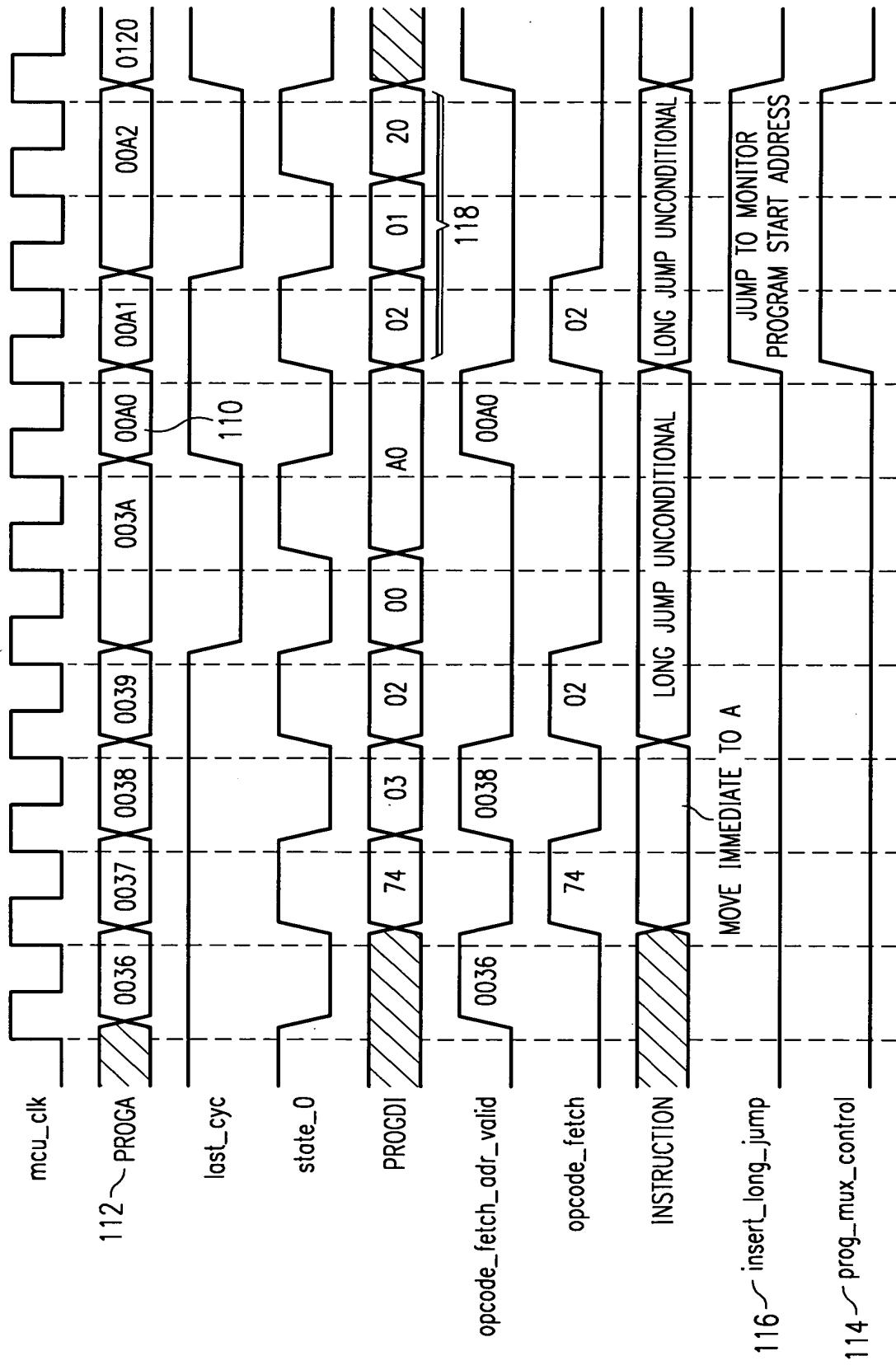


FIG. 8a

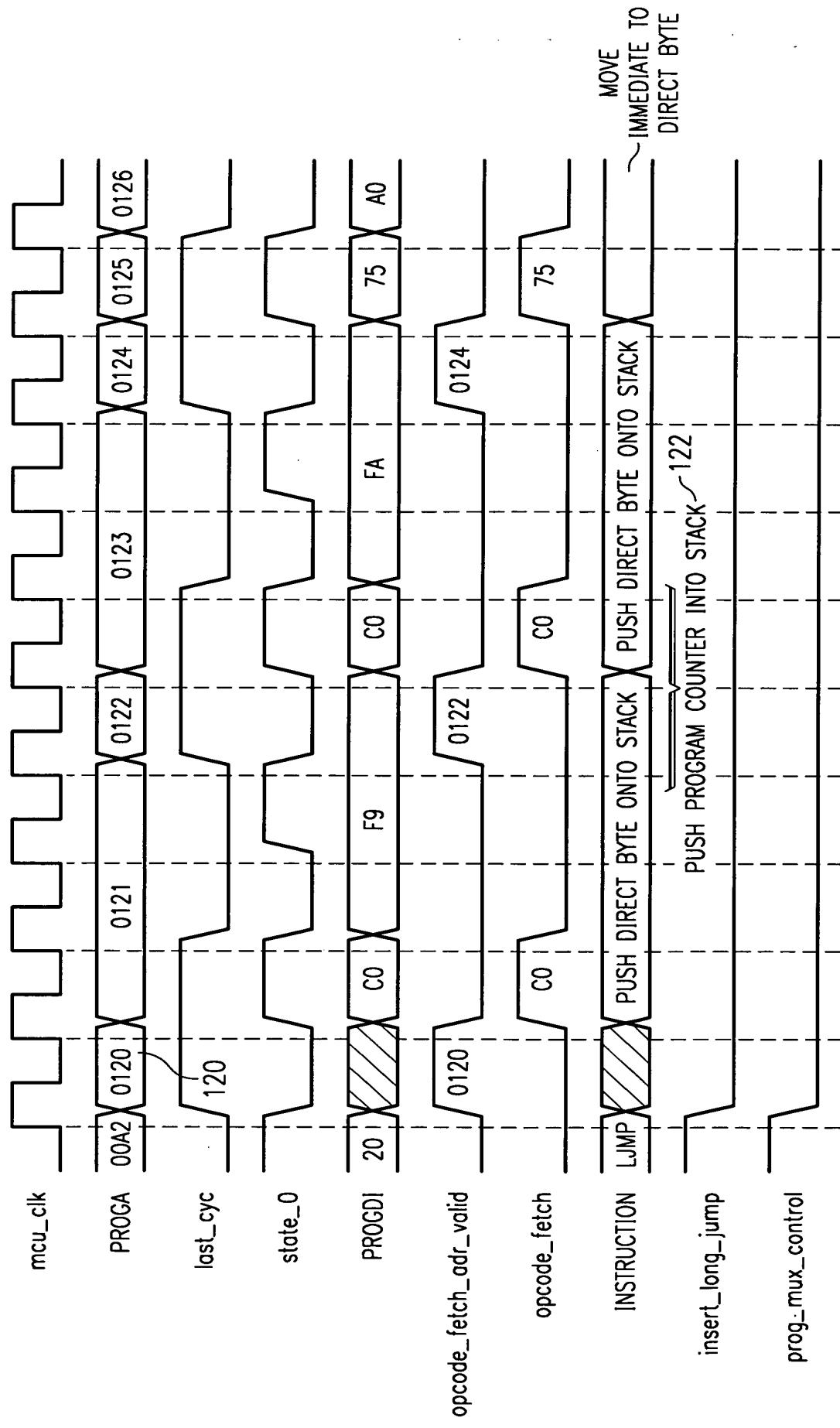


FIG. 8b

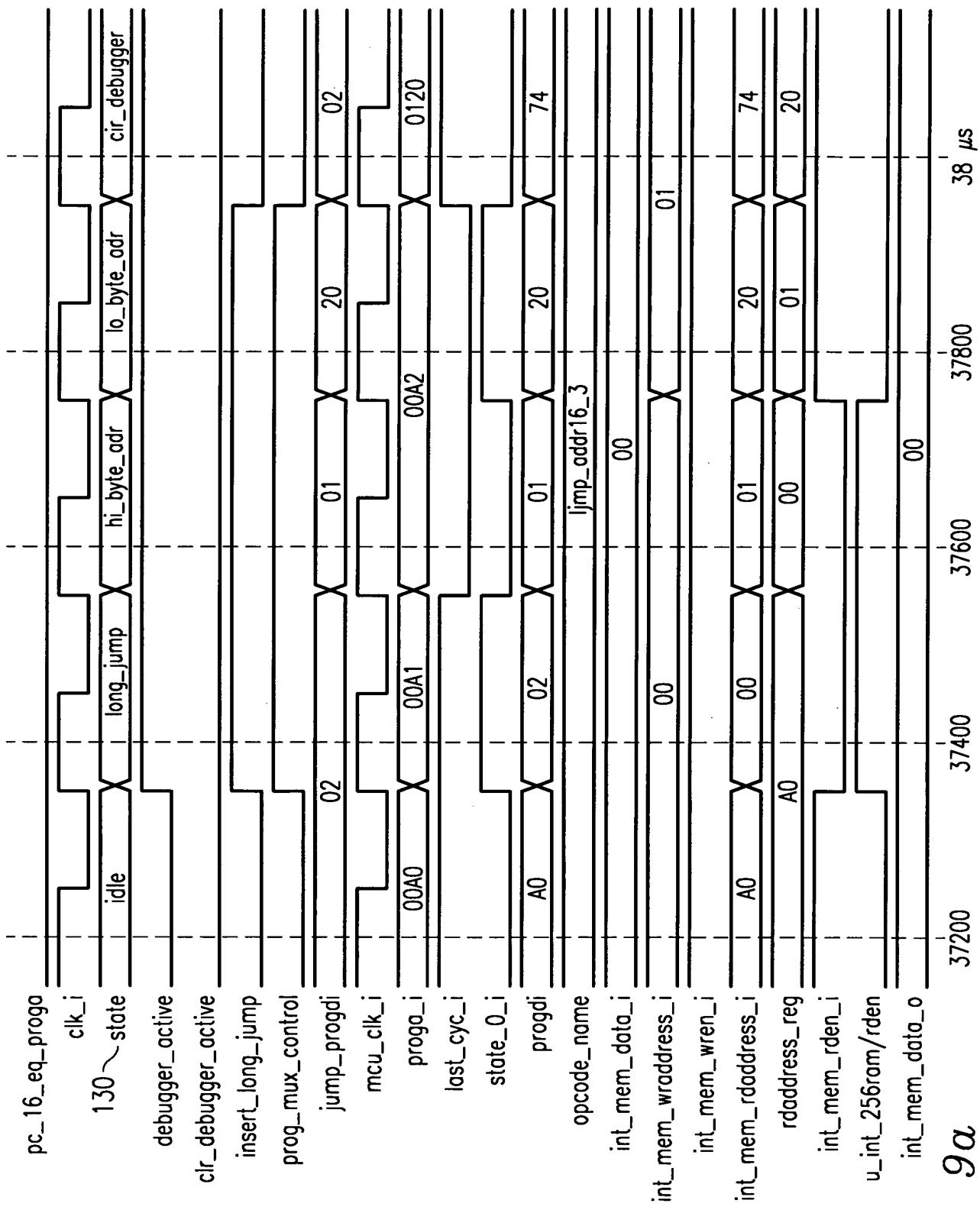


FIG. 9a

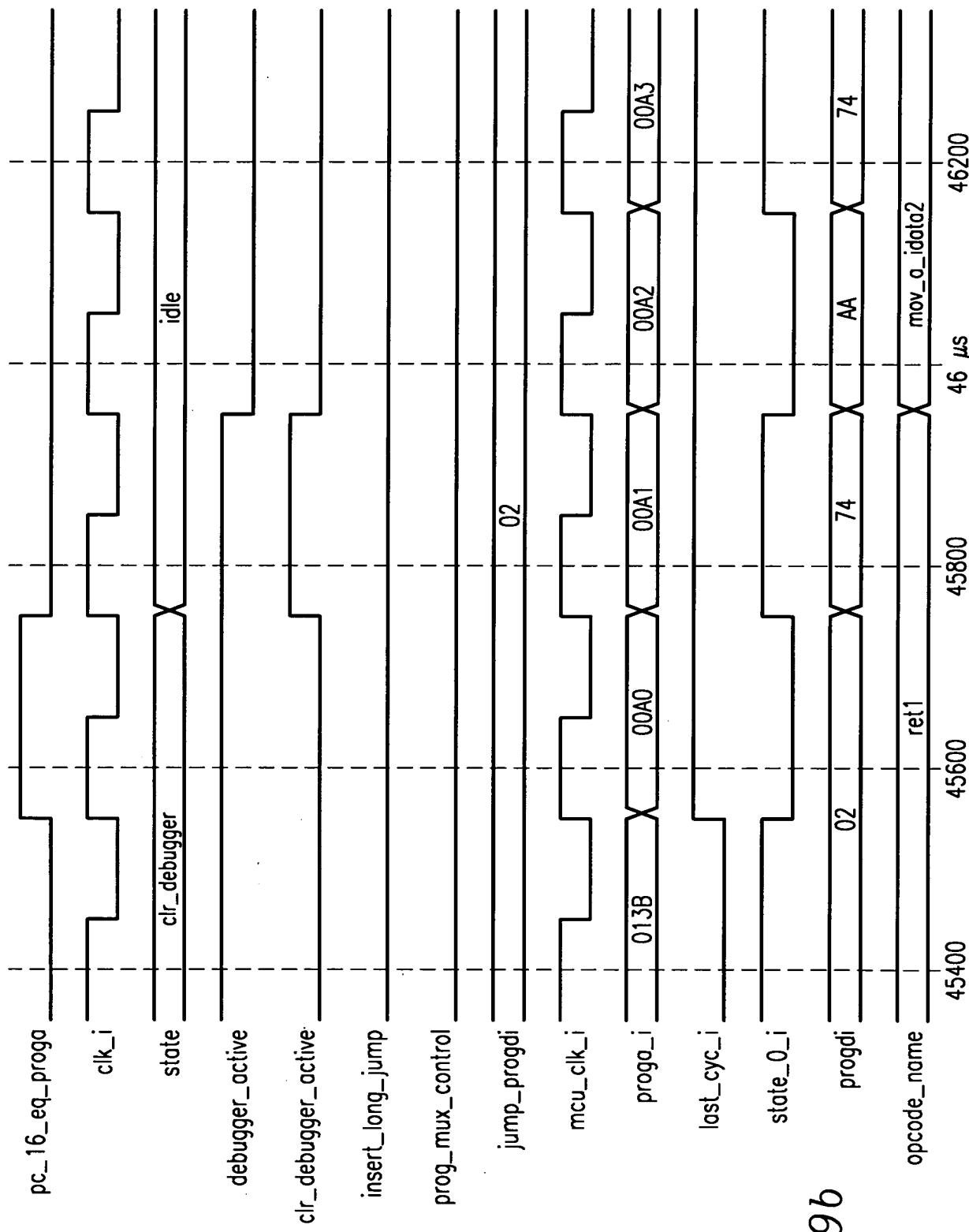


FIG. 9b

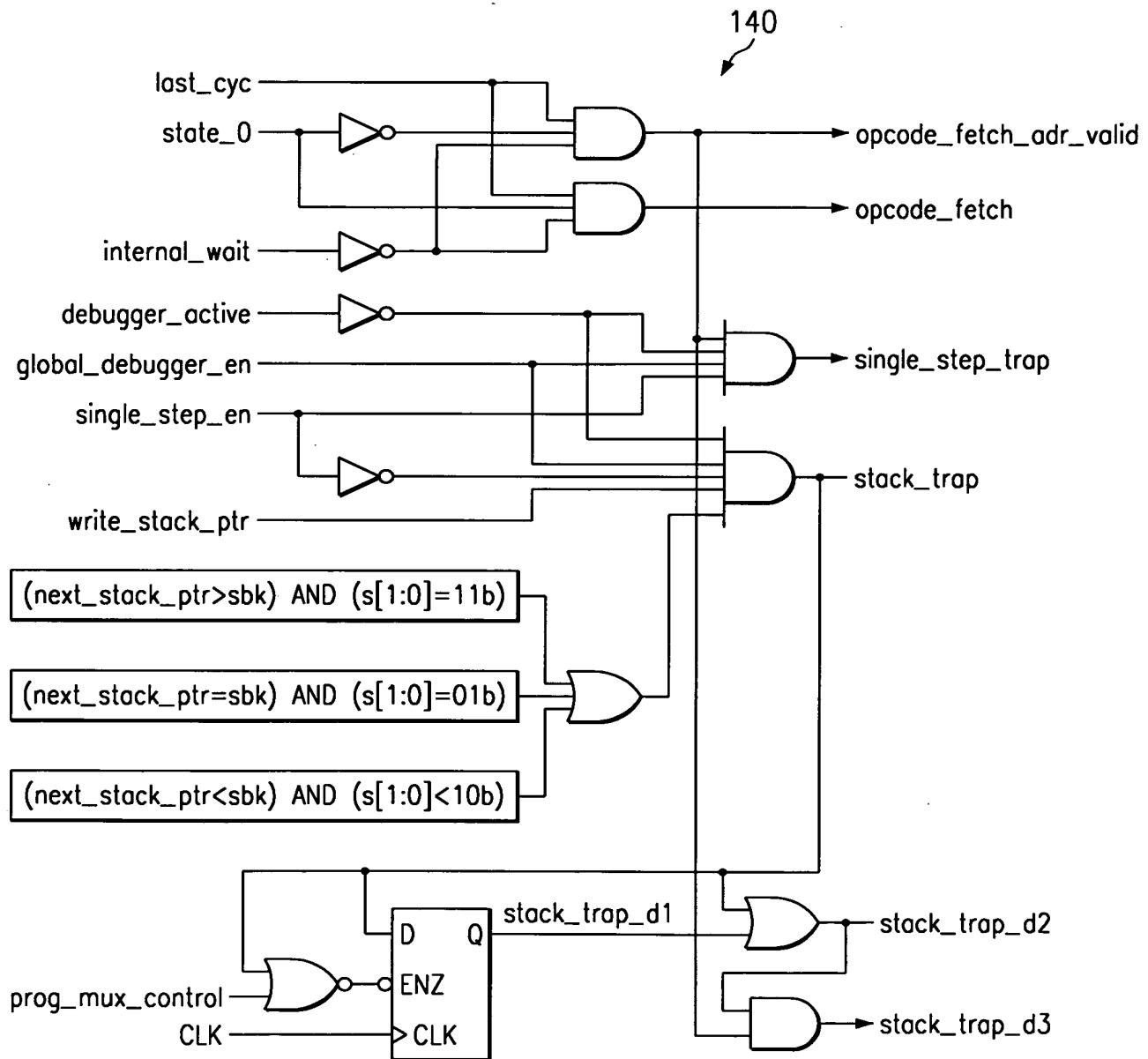


FIG. 10

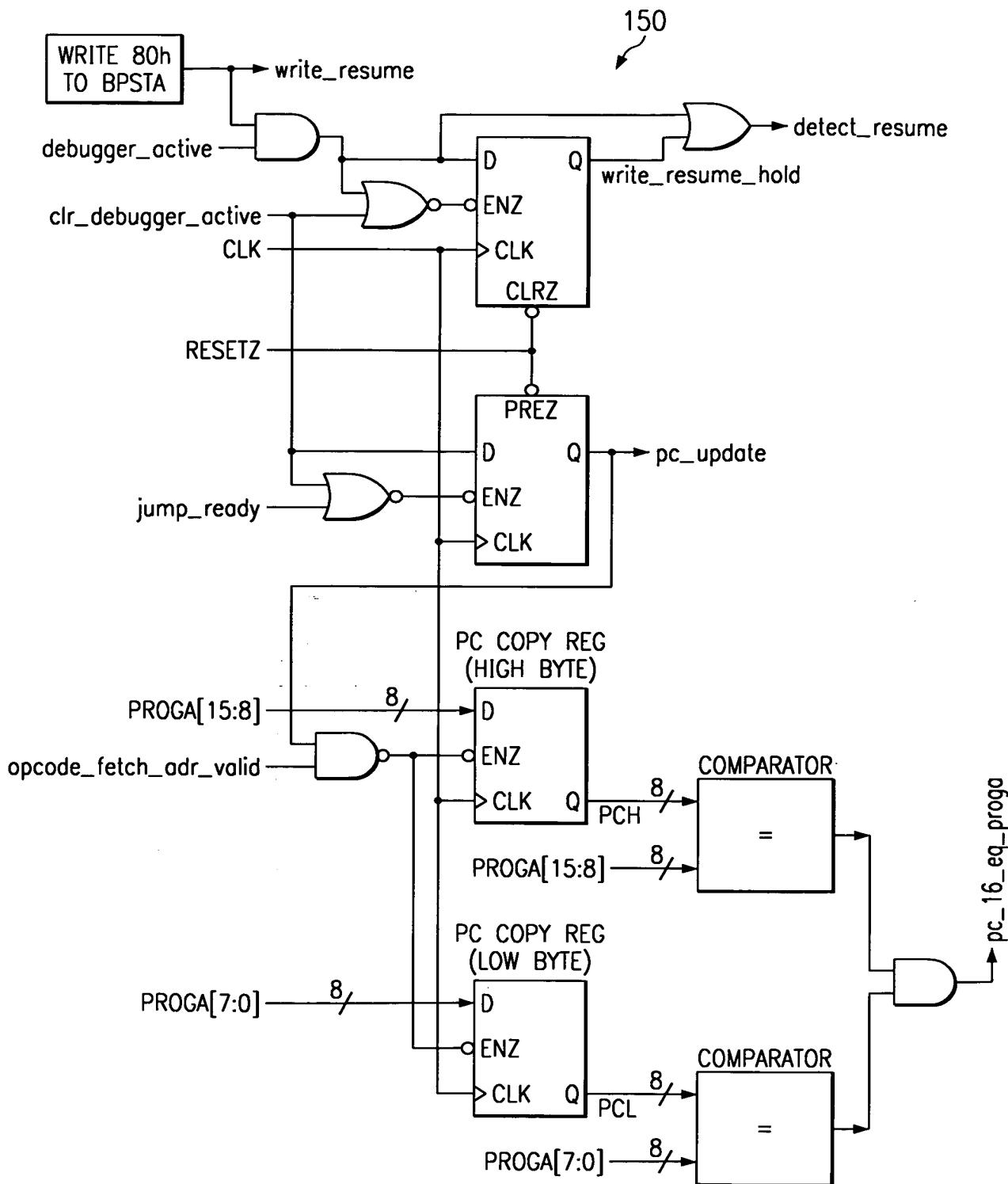


FIG. 11

FIG. 12

160

DESCRIPTION	LABEL	ADDRESS
PORT-0	P0	80
162 STACK POINTER	SP	81
DATA POINTER LB	DPL	82
DATA POINTER HB	DPH	83
POWER CONTROL REG	PCON	87
TIMER/COUNTER CONTROL	TCON	88
TIMER/COUNTER MODE	TMOD	89
TIMER/COUNTER-0 LB	TLO	8A
TIMER/COUNTER-1 LB	TL1	8B
TIMER/COUNTER-0 HB	TH0	8C
TIMER/COUNTER-1 HB	TH1	8D
PORT-1	P1	90
SERIAL CONTROL REGISTER	SCOM	98
SERIAL DATA BUFFER	SBUF	99
PORT-2	P2	A0
INTERRUPT ENABLE REGISTER	IE	A8
PORT-3	P3	B0
INTERRUPT PRIORITY REGISTER	IP	B8
164 BPSTA: BREAK POINT STATUS REGISTER	BPSTA	BD
BPL1: BREAK POINT REGISTER-1 (LB)	BPL1	BE
BPH1: BREAK POINT REGISTER-1 (HB)	PBH1	BF
BNK1: BREAK POINT BANK REGISTER-1	BNK1	C0
BPL2: BREAK POINT REGISTER-2 (LB)	BPL2	C1
BPH2: BREAK POINT REGISTER-2 (HB)	PBH2	C2
BNK2: BREAK POINT BANK REGISTER-2	BNK2	C3
BPL3: BREAK POINT REGISTER-3 (LB)	BPL3	C4
BPH3: BREAK POINT REGISTER-3 (HB)	PBH3	C5
BNK3: BREAK POINT BANK REGISTER-3	BNK3	C6
BPL4: BREAK POINT REGISTER-4 (LB)	BPL4	C7
BPH4: BREAK POINT REGISTER-4 (HB)	PBH4	C8
BNK4: BREAK POINT BANK REGISTER-4	BNK4	C9
JTML: JUMP TO MONITOR ADDRESS REGISTER (LB)	JTML	CA
JTMH: JUMP TO MONITOR ADDRESS REGISTER (HB)	JTMH	CB
RESERVED		CC
RESERVED		CD
SBK: STACK BREAK POINT REGISTER	SBK	CE
BPCRL: BREAK POINT CONTROL REGISTER	BPCRL	CF
PROGRAM STATUS WORD	PSW	DO
D1 → DF IS USED FOR SCRATCH PAD		D1 → DF
ACCUMULATOR	A	E0
INTERRUPT ENABLE REGISTER-1	IE1	E8
B REGISTER	B	F0
RTKTM: RTK TIMER REGISTER	RTKT	F6
VECINT: VECTOR INTERRUPT REGISTER	VEC1	F7
INTERRUPT PRIORITY REGISTER-1	IP1	F8
PCL: PC COPY REGISTER (LB)	PCL	F9
PCH: PC COPY REGISTER (HB)	PCH	FA
WDCSR: WATCHDOG TIMER CONTROL AND STATUS REGISTER	WDCR	FB
MCNFG: MCU CONFIGURATION REGISTER	MCNFG	FC
WSGEN: WAIT-STATE GENERATOR REGISTER	WSGEN	FD
DSOVL: DATA-SPACE AND OVERLAY DEFINITION REGISTER	OVLAY	FE
BANK: BANK SELECT REGISTER	BANK	FF

7	6	5	4	3	2	1	0	
A7	A6	A5	A4	A3	A2	A1	A0	
R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	
BIT	NAME	RESET	FUNCTION					
170	7-0	A[7:0]	00h	SET-1: LOW-BYTE OF BREAK POINT ADDRESS				
7	6	5	4	3	2	1	0	
A15	A14	A13	A12	A11	A10	A9	A8	
R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	
BIT	NAME	RESET	FUNCTION					
172	7-0	A[15:8]	00h	SET-1: HIGH-BYTE OF BREAK POINT ADDRESS				
7	6	5	4	3	2	1	0	
BEN	RSV	RSV	RSV	B3	B2	B1	B0	
R/W	R/O	R/O	R/O	R/W	R/W	R/W	R/W	
BIT	NAME	RESET	FUNCTION					
174	3-0	B[3:0]	0h	SET-1 OF BANK, BREAK POINT ADDRESS				
6-4	RSV	0h	RESERVED=0					
7	BEN	0	BANK, BREAK POINT ENABLE/DISABLE BIT BEN=0 BANK, BREAK POINT ADDRESS IS DISABLED BEN=1 BANK, BREAK POINT ADDRESS IS ENABLED					

FIG. 13

7	6	5	4	3	2	1	0	
A7	A6	A5	A4	A3	A2	A1	A0	
R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	
BIT	NAME	RESET	FUNCTION					
180	7-0	A[7:0]	00h	LOW-BYTE OF THE JUMP TO MONITOR ADDRESS				
7	6	5	4	3	2	1	0	
A15	A14	A13	A12	A11	A10	A9	A8	
R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	
BIT	NAME	RESET	FUNCTION					
182	7-0	A[15:8]	00h	HIGH-BYTE OF THE JUMP TO MONITOR ADDRESS				

FIG. 14

7	6	5	4	3	2	1	0
A7	A6	A5	A4	A3	A2	A1	A0
R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
190	BIT	NAME	RESET	FUNCTION			
7-0	A[7:0]	00h		STACK ADDRESS, USED TO COMPARE AGAINST THE STACK. IF A TRAP CONDITION IS DETECTED A LJMP TO MONITOR WILL BE INSERTED.			

FIG. 15

7	6	5	4	3	2	1	0
P7	P6	P5	P4	P3	P2	P1	P0
R/O	R/O	R/O	R/O	R/O	R/O	R/O	R/O
220	BIT	NAME	RESET	FUNCTION			
7-0	P[7:0]	00h		LOW BYTE OF THE PC. THIS VALUE IS LATCHED BY THE BREAK POINT LOGIC AND CAN BE READ ONLY BY MCU. MONITOR WILL USE THIS ADDRESS TO RESUME THE APPLICATION.			

7	6	5	4	3	2	1	0
P15	P14	P13	P12	P11	P10	P9	P8
R/O	R/O	R/O	R/O	R/O	R/O	R/O	R/O
222	BIT	NAME	RESET	FUNCTION			
7-0	P[7:0]	00h		HIGH BYTE OF THE PC. THIS VALUE IS LATCHED BY THE BREAK POINT LOGIC AND CAN BE READ ONLY BY MCU. MONITOR WILL USE THIS ADDRESS TO RESUME THE APPLICATION.			

FIG. 18

200	7	6	5	4	3	2	1	0							
	BPE	STE	S1	S0	BE4	BE3	BE2	BE1							
	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W							
BIT NAME RESET FUNCTION															
202	0	0	ADDRESS BREAK POINT-1 CONTROL BIT												
			BE1=0		ADDRESS BREAK POINT-1 IS DISABLED										
			BE1=1		ADDRESS BREAK POINT-1 IS ENABLED. IF A MATCH IS DECODED, THE JUMP LOGIC WILL BE TRIGGERED.										
204	1	0	ADDRESS BREAK POINT-2 CONTROL BIT												
			BE2=0		ADDRESS BREAK POINT-2 IS DISABLED										
			BE2=1		ADDRESS BREAK POINT-2 IS ENABLED. IF A MATCH IS DECODED, THE JUMP LOGIC WILL BE TRIGGERED.										
206	2	0	ADDRESS BREAK POINT-3 CONTROL BIT												
			BE3=0		ADDRESS BREAK POINT-3 IS DISABLED										
			BE3=1		ADDRESS BREAK POINT-3 IS ENABLED. IF A MATCH IS DECODED, THE JUMP LOGIC WILL BE TRIGGERED.										
208	3	0	ADDRESS BREAK POINT-4 CONTROL BIT												
			BE4=0		ADDRESS BREAK POINT-4 IS DISABLED										
			BE4=1		ADDRESS BREAK POINT-4 IS ENABLED. IF A MATCH IS DECODED, THE JUMP LOGIC WILL BE TRIGGERED.										
204	5-4	S[1:0]	00b	STACK TRAP CONDITION											
				00b=NO STACK TRAP (STACK TRAP IS DISABLED)											
				01b=STACK TRAP ON SP=SBK 10b=STACK TRAP ON SP<SBK 11b=STACK TRAP ON SP>SBK											
206	6	STE	0	SINGLE STEP ENABLE/DISABLE CONTROL BIT. SEE SINGLE STEP FOR MORE EXPLANATION.											
				STE=0 SINGLE STEP IS DISABLE STE=1 SINGLE STEP IS ENABLED											
208	7	BPE	0	GLOBAL DEBUGGER ENABLE/DISABLE CONTROL BIT											
				BPE=0 THE DEBUGGER LOGIC IS DISABLED. NO BREAK CAN HAPPEN. HOWEVER WRITING TO ALL DEBUGGER REGISTERS IS POSSIBLE.											
				BPE=1 THE DEBUGGER LOGIC IS ENABLED											

FIG. 16

7	6	5	4	3	2	1	0
RES	EA	SSP	SB	B4	B3	B2	B1
W/O	R/O						

FIG. 17

BIT	NAME	RESET	FUNCTION
0	B1	0	ADDRESS BREAK POINT-1 STATUS BIT B1=0 ADDRESS BREAK POINT-1 DIDN'T CAUSED A BREAK CONDITION B1=1 INDICATES THAT ADDRESS BREAK POINT-1 CAUSED THE BREAK CONDITION. THIS BIT WILL BE CLEARED WHEN MCU WRITE "80h" TO THIS REGISTER.
1	B2	0	ADDRESS BREAK POINT-2 STATUS BIT B2=0 ADDRESS BREAK POINT-2 DIDN'T CAUSED A BREAK CONDITION B2=1 ADDRESS BREAK POINT-2 CAUSED THE BREAK CONDITION. THIS BIT WILL BE CLEARED WHEN MCU WRITE "80h" TO THIS REGISTER.
210	2	0	ADDRESS BREAK POINT-3 STATUS BIT B3=0 ADDRESS BREAK POINT-3 DIDN'T CAUSED A BREAK CONDITION B3=1 ADDRESS BREAK POINT-3 CAUSED THE BREAK CONDITION. THIS BIT WILL BE CLEARED WHEN MCU WRITE "80h" TO THIS REGISTER.
210	3	0	ADDRESS BREAK POINT-4 STATUS BIT B4=0 ADDRESS BREAK POINT-4 DIDN'T CAUSED A BREAK CONDITION B4=1 ADDRESS BREAK POINT-4 CAUSED THE BREAK CONDITION. THIS BIT WILL BE CLEARED WHEN MCU WRITE "80h" TO THIS REGISTER.
212	4	0	STACK TRAP STATUS BIT SB=0 STACK TRAP DIDN'T CAUSED A BREAK CONDITION SB=1 STACK TRAP CAUSED THE BREAK CONDITION. THIS BIT WILL BE CLEARED WHEN MCU WRITE "80h" TO THIS REGISTER.
214	5	0	SINGLE STEP BREAK POINT STATUS BIT SSP=0 SINGLE STEP BREAK POINT DIDN'T CAUSED A BREAK CONDITION SSP=1 SINGLE STEP BREAK POINT CAUSED THE BREAK CONDITION. THIS BIT WILL BE CLEARED WHEN MCU WRITE "80h" TO THIS REGISTER.
216	6	0	REFLECTS THE REAL VALUE OF EA BIT WHEN IN DEBUG MODE. SEE SINGLE STEP FOR MORE EXPLANATION. EA=0 INTERRUPT IS DISABLED EA=1 INTERRUPT IS ENABLED
218	7	0	RESUME CONTROL BIT. WRITING A "80h" TO THIS REGISTER WILL WRITE-PROTECT ESFR(BE-CF), ENABLE THE PCL/PCH UPDATE AND CLEAR B[4:1] BITS. THIS BIT IS READ AS "0". WRITING A "55h" TO THIS REGISTER WILL UNPROTECT ESFR(BE-CF) BUT NOT CLEAR THE STATUS BITS.